(FILE 'HOME' ENTERED AT 15:53:45 ON 31 DEC 2002)

FILE 'AGRICOLA, CAPLUS, BIOSIS, EMBASE, USPATFULL' ENTERED AT 15:54:01 ON 31 DEC 2002

L1 488 S GLUCANASE (P) PLANT# (P) (TRANSGENIC OR TRANSFORM?)
L2 323 DUP REM L1 (165 DUPLICATES REMOVED)
L3 8448 S MAHER?/AU
L4 3 S L3 AND L1
L5 2 DUP REM L4 (1 DUPLICATE REMOVED)

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YOU HAVE REQUESTED DATA FROM 24 ANSWERS - CONTINUE? Y/(N):y

L2 ANSWER 300 OF 323 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1993:621539 CAPLUS
DOCUMENT NUMBER: 119:221539
TITLE: Genetic engineering and plant breeding, especially cereals
AUTHOR(S): von Wettstein, Diter
CORPORATE SOURCE: Dep. Physiol., Carlsberg Lab., Copenhagen Valby, DK-2500, Den.
SOURCE: Food Reviews International (1993), 9(3), 411-22
CODEN: FRINEL; ISSN: 8755-9129
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English
AB A review with 41 refs. Over the last 5000 yr, cereals have been bred for food, feed, and beverages by selection of spontaneous mutations and random hybrids. Since the turn of the century, crosses with defined parents, and since 1927 artificially induced mutations, have been used to create variability on which selection of new varieties is based. It is pointed out that hybrid corn and transfer of rust-resistant genes from wild species into chromosomes of bread wheat was preceded by decades of basic research. Genetic **transformation** is an addnl. tool for the breeder to introduce novel genes in a rational manner and will complement but not replace the existing efficient breeding methods. Genetic **transformation** has been demonstrated in maize, rice, and wheat, while techniques to obtain **transgenic** barley **plants** are still being developed. The authors' present knowledge on the endosperm-specific expression of storage proteins and the modulation of this expression by transcriptional activators is reviewed. Breeding strategies for altered protein quality and for proanthocyanidin-free malting barley are presented. Engineering of an improved malt enzyme, a heat stable (1-3, 1-4)-.beta.-**glucanase**, is described. The enzyme is expected to survive, like .alpha.-amylases, the kilning process and has been shown to act efficiently in the mashing process for the elimination of water-sol. .beta.-glucans which impede filtration of wort. The engineered enzyme is expressed in **transformed** aleurone protoplasts and secreted from these cells and thus shown to be operational in the tissue, where it is expected to work. Hormone-regulated promoters for the expression of genes acting during grain development and malting have been characterized. Prospects for the prodn. of polyhydroxyalkanoates and cyclodextrins in cereal grains are discussed.

L2 ANSWER 301 OF 323 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1994:50374 CAPLUS
DOCUMENT NUMBER: 120:50374
TITLE: In vitro anti-microbial activities of defense proteins and biotechnology
AUTHOR(S): Melchers, Leo S.; Ponstein, Anne S.; Sela-Buurlage, Marianne B.; Vloemans, Sandra A.; Cornelissen, Ben J. C.
CORPORATE SOURCE: MOGEN Int. NV, Leiden, 2333 CB, Neth.
SOURCE: Developments in Plant Pathology (1993), 2(Mechanisms

of Plant Defense Responses), 401-10
CODEN: DPPAEF; ISSN: 0929-1318
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The phenomenon of induced resistance in **plants** is accompanied by the induction of the synthesis of a large no. of proteins. It is demonstrated here that, among these proteins, the intracellular class I chitinases, .beta.-1,3-glucanases, and AP24 exhibit antifungal activity in vitro. In contrast, the class II isoforms of these induced proteins show limited or no antifungal activity. Furthermore, it is shown here, that in **transgenic plants** expressing modified forms of either a class I chitinase gene, a class I .beta.-1,3-**glucanase** gene, or an AP24 gene, these proteins are targeted extracellularly. The secreted proteins have retained their antifungal activity in vitro.

L2 ANSWER 302 OF 323 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1994:4815 CAPLUS
DOCUMENT NUMBER: 120:4815
TITLE: Hormonal and tissue-specific regulation of cellulase gene expression in abscission
AUTHOR(S): Tucker, M. L.; Matters, G. L.; Koehler, S. M.; Kemmerer, E. C.; Baird, S. L.; Sexton, R.
CORPORATE SOURCE: Plant Mol. Biol. Lab., ARS, Beltsville, MD, 20705, USA
SOURCE: Current Plant Science and Biotechnology in Agriculture (1993), 16(Cellular and Molecular Aspects of the Plant Hormone Ethylene), 265-71
CODEN: CPBAE2; ISSN: 0924-1949
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Cellulase (endo-1,4-.beta.-D-**glucanase**) is one of several cell wall hydrolases playing a crit. role in many **plant** developmental processes. The authors have identified cDNA and genomic clones encoding a cellulase assocd. with bean leaf abscission. The tissue- and cell-specific accumulation of cellulase mRNA was examd. using RNA gel blots and in situ hybridization. In situ hybridization indicates that all cells in the abscission fracture plane, regardless of cell type, accumulate cellulase mRNA. Expts. with 2,5-norbornadiene, a competitive inhibitor of ethylene action, show that ethylene is required not only to initiate cellulase gene expression in abscission but also to maintain its expression. Auxin, in the presence of 5 .mu.L/L ethylene, inhibits the accumulation of cellulase mRNA. Deletions through the 5' upstream region of the bean cellulase gene were fused to a .beta.-glucuronidase (GUS) reporter gene. These promoter constructs can be analyzed in bean using a particle bombardment transient assay and in stably **transformed transgenic** tomato **plants**.

L2 ANSWER 303 OF 323 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 99
ACCESSION NUMBER: 1993:464271 CAPLUS
DOCUMENT NUMBER: 119:64271
TITLE: Activities of chitinase and .beta.-1,3-**glucanase** in tobacco **plants** **transformed** by TMV coat protein gene
AUTHOR(S): Du, Liangcheng; Li, Ying; Hu, Yunqian
CORPORATE SOURCE: Kunming Inst. Bot., Acad. Sin., Kunming, 650204, Peop. Rep. China
SOURCE: Yunnan Zhiwu Yanjiu (1993), 15(1), 107-9
CODEN: YCWCDP; ISSN: 0253-2700
DOCUMENT TYPE: Journal
LANGUAGE: Chinese
AB The coat protein gene of tobacco mosaic virus (TMV) was cloned in an Agrobacterium vector. Recombinant Agrobacterium cells were used to **transform** tobacco **plants**. **Transformed** tobacco **plants** showed higher activities of chitinase and .beta.-1,3-**glucanase**, as well as higher resistance to TMV.

L2 ANSWER 304 OF 323 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1995:179618 CAPLUS
DOCUMENT NUMBER: 122:30202
TITLE: Biotechnology for the improvement of malting barley.
AUTHOR(S): Mannonen, Leena; Kurten, Ulrika; Ritala, Anneli; Salmenkallio-Marttila, Marjatta; Hannus, Riitta; Aspegren, Kristian; Teeri, Teemu; Kauppinen, Veli
CORPORATE SOURCE: Biotechnical Laboratory, VTT, Technical Research Centre Finland, Espoo, Finland
SOURCE: Proceedings of the Congress - European Brewery Convention (1993), 24TH, 85-93
CODEN: EBCPA6; ISSN: 0367-018X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A method for the **transformation** of barley was developed. The first application of this method for the genetic improvement of malting barley quality is the transfer of a gene coding for thermostable .beta.-**glucanase** that enhances modification of the malt and improves brewing. In the first phase, research has been focused on barley cell culture technol. and on development of the gene transfer methods. Direct embryogenesis through microspores or immature embryos was used to obtain target material for **transformation**. Electroporation and particle bombardment have led to **transgenic** cell cultures and **plants**. Two .alpha.-amylase premotors were isolated from malting barley and linked to the Trichoderma reesei eg11 .beta.-**glucanase** gene to form gene transfer vectors.

L2 ANSWER 305 OF 323 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1993:577783 CAPLUS
DOCUMENT NUMBER: 119:177783
TITLE: Plant chitinase cDNA and gene for use in increasing resistance to fungal pathogens.
INVENTOR(S): Mikkelsen, Joern Dalgaard; Bojsen, Kirsten; Nielsen, Klaus K.; Berglund, Lars
PATENT ASSIGNEE(S): Danisco A/S, Den.
SOURCE: PCT Int. Appl., 253 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9217591	A1	19921015	WO 1992-DK108	19920407
W: AU, CA, CS, HU, JP, PL, RU, US				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, MC, NL, SE				
CA 2048696	AA	19921009	CA 1991-2048696	19910806
CA 2048477	AA	19921009	CA 1991-2048477	19910808
CA 2106309	AA	19921009	CA 1992-2106309	19920407
AU 9216599	A1	19921102	AU 1992-16599	19920407
AU 659455	B2	19950518		
EP 579709	A1	19940126	EP 1992-909133	19920407
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
JP 06507070	T2	19940811	JP 1992-508462	19920407
HU 67059	A2	19950130	HU 1993-2829	19920407
PRIORITY APPLN. INFO.:			DK 1991-616	19910408
			US 1991-739805	19910805
			WO 1992-DK108	19920407

AB A cDNA and the gene for chitinase 4 of sugar beet is cloned and characterized, for use in increasing resistance of plants to fungal pathogens. The enzyme has chitinase and lysozyme activities and so is effective in inhibiting growth of chitinous fungi. It is used in

combination with other chitinases and glucanases. Chitinases 2, 3, and 4 of sugar beet leaves were purified by std. methods. A combination of chitinase and .beta.-1,3-glucanase was effective in inhibiting growth of Cercospora. A cDNA for chitinase 4 was cloned from a sugar beet leaf cDNA bank in .lambda.ZAP by screening with an amino acid sequence-derived probe and used to screen a Sau3A partial digest library in .lambda.EMBL3. The genes for other chitinases are cloned and the introduction of the gene into plants and the prepn. of analogs are discussed.

L2 ANSWER 306 OF 323 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1993:76107 CAPLUS
DOCUMENT NUMBER: 118:76107
TITLE: Cloning of cDNA for novel .beta.-1,3-glucanase activity of soybean
INVENTOR(S): Sass, Catherine; Leguay, Jean Jacques; Grison, Rene; Toppan, Alain
PATENT ASSIGNEE(S): Elf Sanofi, Fr.; Societe Nationale Elf Aquitaine
SOURCE: PCT Int. Appl., 80 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9216632	A1	19921001	WO 1992-FR268	19920325
W: AU, CA, JP, US				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, MC, NL, SE				
FR 2674538	A1	19921002	FR 1991-3588	19910325
FR 2674538	B1	19941118		
AU 9216467	A1	19921021	AU 1992-16467	19920325
AU 662139	B2	19950824		
EP 536364	A1	19930414	EP 1992-908870	19920325
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
JP 06500237	T2	19940113	JP 1992-508030	19920325
US 5477001	A	19951219	US 1993-966187	19930125
PRIORITY APPLN. INFO.:			FR 1991-3588	19910325
			WO 1992-FR268	19920325

AB A cDNA encoding a .beta.-1,3-**glucanase** of soybean is cloned and expressed in **transgenic plants**. The enzyme is useful in increasing resistance of **plants** to fungal pathogens and in biomass conversion. A cDNA bank from soybean callus in .lambda.gt11 was screened with antibody to the corresponding tobacco enzyme. Expression of the cDNA in Escherichia coli resulted in the accumulation of three forms of the enzyme; the differences between them was not as a result of N-terminal processing. The cDNA was placed under control of the cauliflower mosaic virus 35S promoter and introduced into tobacco by Agrobacterium-mediated **transformation** and integration and expression of the **transforming** DNA were demonstrated. **Plants** derived from the R0 generation were shown to be significantly more resistant to infection by the fungus Chalara elegans than control **plants**.

L2 ANSWER 307 OF 323 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1992:606329 CAPLUS
DOCUMENT NUMBER: 117:206329
TITLE: Transgenic plants having a modified carbohydrate content
INVENTOR(S): Van den Elzen, Peter J. M.; Pen, Jan; Hoekema, Andreas; Sijmons, Peter Christiaan; Van Ooyen, Albert J. J.; Rietveld, Krijn; Quax, Wilhelmus Johannes
PATENT ASSIGNEE(S): Gist-Brocades N.v., Neth.; Mogen International N.v.
SOURCE: PCT Int. Appl., 46 pp.

CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9205259	A1	19920402	WO 1991-NL171	19910913
W: AU, CA, JP, US				
CA 2072656	AA	19920314	CA 1991-2072656	19910913
EP 479359	A1	19920408	EP 1991-202355	19910913
EP 479359	B1	19981230		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
AU 9186514	A1	19920415	AU 1991-86514	19910913
AU 656920	B2	19950223		
JP 05502591	T2	19930513	JP 1991-517456	19910913
AT 175238	E	19990115	AT 1991-202355	19910913
US 5705375	A	19980106	US 1994-253575	19940603

PRIORITY APPLN. INFO.: EP 1990-202434 19900913
WO 1991-NL171 19910913
US 1992-849422 19920612

AB A method for producing plants or plant organs with modified carbohydrate content comprises prepg. a transgenic plant expressing a plant polysaccharide-degrading enzyme gene. A binary vector, pMOG437, contg. the Bacillus licheniformis .alpha.-amylase gene and Aspergillus niger glucoamylase gene under the control of the tuber-specific class I patatin promoter, was prepd. Transgenic Solanum tuberosum cv. Desiree contg. these genes were produced by std. methods. .alpha.-Amylase and glucoamylase activity were found only in the tubers. A higher content of sol. sugars was found in the transgenic tubers relative to control tubers.

L2 ANSWER 308 OF 323 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1992:628425 CAPLUS
DOCUMENT NUMBER: 117:228425
TITLE: Plant-associated bacteria expressing plant pathogenesis-related protein genes and their use in protection of plants from pathogens
INVENTOR(S): Gaffney, Thomas D.; Lam, Stephen T.
PATENT ASSIGNEE(S): Ciba-Geigy A.-G., Switz.
SOURCE: Eur. Pat. Appl., 37 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 474601	A2	19920311	EP 1991-810690	19910829
EP 474601	A3	19921028		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
CA 2050743	AA	19920308	CA 1991-2050743	19910905
AU 9183720	A1	19920312	AU 1991-83720	19910906
AU 646492	B2	19940224		
ZA 9107091	A	19920527	ZA 1991-7091	19910906
JP 05236968	A2	19930917	JP 1991-254560	19910906

PRIORITY APPLN. INFO.: US 1990-579457 19900907

AB Genes comprising bacterial regulatory sequences fused to **plant** pathogenesis-related protein genes are described. Soil bacteria expressing these genes can be introduced into the rhizosphere in order to provide protection against pathogenic microorganisms. Thus, **transgenic** Pseudomonas fluorescens producing cucumber chitinase or tobacco basic .beta.-1,3-**glucanase** were applied to cotton seeds.

This treatment resulted in protection from post-emergence damping-off caused by Rhizoctonia solani.

L2 ANSWER 309 OF 323 USPATFULL
ACCESSION NUMBER: 92:99044 USPATFULL
TITLE: Endo-1,4-.beta.-glucanase gene and its use in plants
INVENTOR(S): Bennett, Alan B., Davis, CA, United States
Fischer, Robert L., El Cerrito, CA, United States
Lashbrook, Coralie, Dixon, CA, United States
Giovannoni, James, San Francisco, CA, United States
PATENT ASSIGNEE(S): The Regents of the University of California, Oakland, CA, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 5168064		19921201
APPLICATION INFO.:	US 1990-511417		19900420 (7)

DOCUMENT TYPE: Utility
FILE SEGMENT: Granted
PRIMARY EXAMINER: Fox, David T.
LEGAL REPRESENTATIVE: Townsend and Townsend
NUMBER OF CLAIMS: 2
EXEMPLARY CLAIM: 1
NUMBER OF DRAWINGS: 2 Drawing Figure(s); 1 Drawing Page(s)
LINE COUNT: 967
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB The present invention provides a method for reducing fruit softening and cell wall polysaccharide degradation by inhibiting endo-1,4-.beta.-glucanase activity using antisense DNA constructions.

L2 ANSWER 310 OF 323 AGRICOLA DUPLICATE 100
ACCESSION NUMBER: 92:90630 AGRICOLA
DOCUMENT NUMBER: IND92052794
TITLE: Suppression of beta-1,3-glucanase transgene expression in homozygous plants.
AUTHOR(S): Carvalho, F. de; Gheysen, G.; Kushnir, S.; Montagu, M. van; Inze, D.; Castresana, C.
CORPORATE SOURCE: Universiteit Gent, Gent, Belgium
AVAILABILITY: DNAL (QH506.E46)
SOURCE: The EMBO journal - European Molecular Biology Organization, July 1992. Vol. 11, No. 7. p. 2595-2602
Publisher: Oxford, Eng. : IRL Press.
CODEN: EMJODG; ISSN: 0261-4189
NOTE: Includes references.
DOCUMENT TYPE: Article
FILE SEGMENT: Non-U.S. Imprint other than FAO
LANGUAGE: English
AB A chimeric construct containing the Nicotiana plumbaginifolia beta-1,3-**glucanase** gn1 gene was introduced into Nicotiana tabacum SR1 to produce high levels of the enzyme constitutively. We determined that the GN1 protein represents a basic beta-1,3-**glucanase** isoform which accumulates into the vacuoles of the **transgenic plants** . Analysis of the progeny of the **transgenic plant** with the highest levels of gn1 expression revealed an unexpected phenomenon of gene suppression. **Plants** hemizygous for the T-DNA locus contained high levels of gn1 mRNA and exhibited a 14-fold higher beta-1,3-**glucanase** activity than untransformed **plants**. However, the expression of gn1 was completely suppressed in the homozygous **plants**: no corresponding mRNA or protein could be detected. This suppression mechanism occurs at a post-transcriptional level and is under developmental control. In addition, by generating haploid **plants** we found that this silencing phenomenon is not dependent on allelic interaction between T-DNA copies present at the same locus of homologous chromosomes, but rather is correlated with the transgene dose in the

plant genome. We postulate that high doses of GN1 protein relative to the level(s) of other still unknown **plant** products could trigger the cellular processes directed to suppress gn1 expression.

L2 ANSWER 311 OF 323 AGRICOLA DUPLICATE 101
ACCESSION NUMBER: 92:112708 AGRICOLA
DOCUMENT NUMBER: IND92067944
TITLE: The function of vacuolar beta-1,3-**glucanase** investigated by antisense **transformation**. Susceptibility of **transgenic** Nicotiana sylvestris **plants** to Cercospora nicotianae infection.
AUTHOR(S): Neuhaus, J.M.; Flores, S.; Keefe, D.; Ahl-Goy, P.; Meins, F. Jr
CORPORATE SOURCE: Friedrich Miescher-Institut, Switzerland
AVAILABILITY: DNAL (QK710.P62)
SOURCE: Plant molecular biology : an international journal on molecular biology, biochemistry and genetic engineering, Aug 1992. Vol. 19, No. 5. p. 803-813 Publisher: Dordrecht : Kluwer Academic Publishers. ISSN: 0167-4412
NOTE: Includes references.
DOCUMENT TYPE: Article
FILE SEGMENT: Non-U.S. Imprint other than FAO
LANGUAGE: English
AB Vacuolar class I beta-1,3-glucanases (EC 3.2.1.39) are believed to be important in the induced defense reaction of **plants** to fungal infection. We used antisense **transformation** to test this hypothesis and to identify other possible physiological functions of this enzyme. Nicotiana sylvestris **plants** were **transformed** with antisense constructions containing the region from position 27 to 608 of the coding sequence of the basic, vacuolar beta-1,3-**glucanase** gene GLA of tobacco regulated by cauliflower mosaic virus 35S RNA expression signals. **Plants** homozygous for this transgene showed a marked, ca. 20-fold reduction in the constitutive expression of class I beta-1,3-**glucanase** antigen in their leaves. RNA blot analysis indicated that the antisense **plants** expressed low levels of the sense transcript of the host beta-1,3-**glucanase** gene and the antisense transcript of the transgene. Immune blot analysis of **plant** extracts indicated that only expression of the N. sylvestris homologue of class I tobacco beta-1,3-**glucanase** and not the acidic, class II isoforms of the enzyme was blocked in the antisense **plants**. Class I isoforms of beta-1,3-**glucanase** and chitinase were coordinately induced in leaves of untransformed and empty-vector-**transformed** N. sylvestris **plants** treated with ethylene or infected with the fungal leaf pathogen Cercospora nicotianae. In antisense **plants**, chitinase but not beta-1,3-**glucanase** was induced under these conditions indicating that antisense **transformation** effectively blocks constitutive as well as induced expression of class I beta-1,3-**glucanase**. Under greenhouse conditions, antisense **plants** developed normally and were fertile. The **plants** did not exhibit increased susceptibility to C. nicotianae infection. These results suggest that expression of the beta-1,3-**glucanase** isoform blocked by antisense **transformation** is not necessary for 'house-keeping' functions of N. sylvestris nor defense against the fungal pathogen tested.

L2 ANSWER 312 OF 323 AGRICOLA DUPLICATE 102
ACCESSION NUMBER: 92:115006 AGRICOLA
DOCUMENT NUMBER: IND92070251
TITLE: Premature dissolution of the microsporocyte callose wall causes male sterility in transgenic tobacco.
AUTHOR(S): Worrall, D.; Hird, D.L.; Hodge, R.; Paul, W.; Draper, J.; Scott, R.

CORPORATE SOURCE: University of Leicester, Leicester, UK
AVAILABILITY: DNAL (QK725.P532)
SOURCE: The Plant cell, July 1992. Vol. 4, No. 7. p. 759-771
Publisher: Rockville, Md. : American Society of Plant Physiologists.
ISSN: 1040-4651
NOTE: Includes references.
DOCUMENT TYPE: Article
FILE SEGMENT: U.S. Imprints not USDA, Experiment or Extension
LANGUAGE: English

AB Male sterility in a petunia cytoplasmic male sterile line has been attributed to the early appearance of active callase, a beta-1,3-**glucanase**, in the anther locule. This leads to premature dissolution of the callose walls surrounding the microsporogenous cells. We have mimicked this aspect of the petunia line in **transgenic** tobacco by engineering the secretion of a modified pathogenesis-related vacuolar beta-1,3-**glucanase** from the tapetum prior to the appearance of callase activity in the locule. **Plants** expressing the modified **glucanase** from tapetum-specific promoters exhibited reduced male fertility, ranging from complete to partial male sterility. Callose appearance and distribution are normal in the male sterile **transgenic plants** up to prophase I, whereupon callose is prematurely degraded. Meiosis and cell division occur normally. The resultant microspores have an abnormally thin cell wall that lacks sculpturing. The tapetum shows hypertrophy. Male sterility is probably caused by bursting of the aberrant microspores at a time corresponding to microspore release. These results demonstrate that premature callose degradation is sufficient to cause male sterility and suggest that callose is essential for the formation of a normal microspore cell wall.

L2 ANSWER 313 OF 323 AGRICOLA DUPLICATE 103
ACCESSION NUMBER: 1998:7573 AGRICOLA
DOCUMENT NUMBER: IND20612762
TITLE: Constitutive expression of stress-inducible genes, including pathogenesis-related 1 protein gene in a transgenic interspecific hybrid of Nicotiana glutinosa X Nicotiana debneyi.
AUTHOR(S): Ohashi, Y.; Ohshima, M.; Itoh, H.; Matsuoka, M.; Watanabe, S.; Murakami, T.; Hosokawa, D.
CORPORATE SOURCE: National Institute of Agrobiological Resources, Ibaraki, Japan.
AVAILABILITY: DNAL (450 P699)
SOURCE: Plant and cell physiology, Mar 1992. Vol. 33, No. 2. p. 177-187
Publisher: Kyoto, Japan : Japanese Society of Plant Physiologists.
CODEN: PCPHA5; ISSN: 0032-0781
NOTE: Includes references
PUB. COUNTRY: Japan
DOCUMENT TYPE: Article
FILE SEGMENT: Non-U.S. Imprint other than FAO
LANGUAGE: English

AB Constitutive expression of a type of stress-inducible proteins including pathogenesis-related (PR) 1 protein and ubiquitin-related protein in an interspecific hybrid of Nicotiana glutinosa X Nicotiana debneyi was noted. In the two parental species and in tobacco, these proteins are not expressed in healthy **plants** but they are induced by stresses such as the formation of local lesions after viral infection and treatment of salicylic acid. A second type of stress-inducible genes, such as the genes for basic beta-1,3-**glucanase** and putative proteinase inhibitor were regulated normally, and were not expressed constitutively in the hybrid. In the **transgenic** hybrid, into which a chimeric gene consisting of 5' upstream of tobacco PR1a gene and beta-glucuronidase (GUS) gene was introduced, very high GUS activity was expressed

constitutively even at healthy state. An abnormal response by this hybrid to **plant** hormones was also noted. A possible mechanism for the unregulated expression of the stress-inducible genes in the interspecific hybrid is discussed.

L2 . ANSWER 314 OF 323 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1992:467997 BIOSIS
DOCUMENT NUMBER: BR43:89347
TITLE: STUDY OF THE PHYSIOLOGICAL FUNCTIONS OF BETA-1 3 **GLUCANASE** IN ANTISENSE TOBACCO NICOTIANA-TABACUM **TRANSFORMED PLANTS**.
AUTHOR(S): BEFFA R S; MEINS F JR
CORPORATE SOURCE: FRIEDRICH MIESCHER-INST., CH-4002 BASEL, SWITZ.
SOURCE: 24TH ANNUAL MEETING OF THE SWISS SOCIETIES FOR EXPERIMENTAL BIOLOGY (USGEB/USSBE), BASEL, SWITZERLAND, MARCH 19-20, 1992. EXPERIENTIA (BASEL), (1992) 48 (ABSTR), A9. CODEN: EXPEAM. ISSN: 0014-4754.
DOCUMENT TYPE: Conference
FILE SEGMENT: BR; OLD
LANGUAGE: English

L2 ANSWER 315 OF 323 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1992:189131 CAPLUS
DOCUMENT NUMBER: 116:189131
TITLE: Novel signal sequences for targetting of heterologous proteins to plant vacuoles
INVENTOR(S): Boller, Thomas; Neuhaus, Jean Marc; Ryals, John
PATENT ASSIGNEE(S): Ciba-Geigy A.-G., Switz.
SOURCE: Eur. Pat. Appl., 81 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 462065	A2	19911218	EP 1991-810430	19910606
EP 462065	A3	19920520		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
CA 2044476	AA	19911216	CA 1991-2044476	19910613
AU 9178415	A1	19911219	AU 1991-78415	19910614
AU 653526	B2	19941006		
BR 9102461	A	19920121	BR 1991-2461	19910614
HU 58758	A2	19920330	HU 1991-1994	19910614
JP 04229182	A2	19920818	JP 1991-170549	19910615
US 6054637	A	20000425	US 1994-329799	19941026
PRIORITY APPLN. INFO.:			CH 1990-2007	19900615
			US 1991-715521	19910614

AB Peptides responsible for targetting proteins to plant vacuoles and DNA sequences encoding them are described for use in plant genetic engineering. The peptides are from the C-terminal regions of chitinases and glucanases. A cDNA for tobacco chitinase was cloned by antibody screening of an expression bank and the corresponding genomic sequence was cloned using this sequence as a probe. A corresponding cDNA for the pathogen- induced chitinase of cucumber was cloned by screening with amino acid sequence- derived oligonucleotide probes. A series of deletion analogs of the cDNAs were prepd. and introduced into tobacco callus. The cellular localization of the various derivs. in regenerated plants was detd.

7 L2 ANSWER 316 OF 323 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1992:146144 CAPLUS
DOCUMENT NUMBER: 116:146144

TITLE: Control of plant pathogens with compositions comprising lytic peptides and hydrolytic enzymes and transgenic plants producing such compositions
INVENTOR(S): Ryals, John A.; Gay, Philippe Bernard; Ahl Goy, Patricia A.; Garcia-Olmedo, Francisco
PATENT ASSIGNEE(S): Ciba-Geigy A.-G., Switz.
SOURCE: Eur. Pat. Appl., 35 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 448511	A1	19910925	EP 1991-810144	19910304
EP 448511	B1	20010718		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
AT 203141	E	20010815	AT 1991-810144	19910304
ES 2161210	T3	20011201	ES 1991-810144	19910304
CA 2037806	AA	19910913	CA 1991-2037806	19910308
JP 04217903	A2	19920807	JP 1991-69129	19910308
IL 97480	A1	19960618	IL 1991-97480	19910308
NO 9100947	A	19910913	NO 1991-947	19910311
AU 9172797	A1	19910919	AU 1991-72797	19910311
AU 655579	B2	19950105		
HU 56703	A2	19911028	HU 1991-788	19910311
ZA 9101766	A	19911127	ZA 1991-1766	19910311

PRIORITY APPLN. INFO.: US 1990-491801 A 19900312

AB A compn. for controlling **plant** pathogens comprises .gtoreq.1 cell membrane-degrading components, e.g. defensins, and .gtoreq.1 hydrolytic enzymes such as chitinase. Chitinase and .beta.-1,3-**glucanase** of C2H2-treated bean leaves were purified and combined with various synthetic lytic peptides, e.g. barley thionin .beta. or melittin. These compns. inhibited the growth of Septoria nodorum. Binary vectors contg. a gene for one of the enzymes or for a lytic peptide were prepd. and procedures for **transformation** of **plant** cells and regeneration of **transgenic plants** were described.

L2 ANSWER 317 OF 323 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1991:649587 CAPLUS
DOCUMENT NUMBER: 115:249587
TITLE: Fungus-resistant plants, process for obtaining fungus-resistant plants, and recombinant polynucleotides for use therein
INVENTOR(S): Cornelissen, Bernardus Johannes Clemens; Melchers, Leo Sjoerd; Meulenhoff, Elisabeth Josine Sophie; Van Roekel, Jeroen Sebastiaan Charles; Sela-Buurlage, Marianne Beatrix; Vloemans, Alexandra Aleida; Woloshuk, Charles Peter; Bol, John Ferdinand; Linthorst, Hubertus Josephus Maria
PATENT ASSIGNEE(S): Mogen International N. V., Neth.; Rijksuniversiteit Leiden
SOURCE: Eur. Pat. Appl., 55 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 440304	A1	19910807	EP 1991-200191	19910130

EP 440304	B1	20001129			
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE					
IL 97020	A1	20001206	IL 1991-97020		19910124
CA 2035134	AA	19910731	CA 1991-2035134		19910129
AU 9170034	A1	19910801	AU 1991-70034		19910129
AU 654471	B2	19941110			
JP 08280283	A2	19961029	JP 1991-216681		19910129
AT 197815	E	20001215	AT 1991-200191		19910130
ES 2152213	T3	20010201	ES 1991-200191		19910130
US 5670706	A	19970923	US 1993-47413		19930419
US 6066491	A	20000523	US 1994-229050		19940418
US 6087560	A	20000711	US 1997-801563		19970218
PRIORITY APPLN. INFO.:			NL 1990-222	A	19900130
			US 1991-647831	B3	19910129
			US 1993-47413	A1	19930419

AB Fungus-resistant **plants** which overexpress a chitinase and/or a .beta.-1,3-**glucanase** gene, esp. which overexpress genes modified to cause localization of these enzymes to the apoplastic space, are prepd. The genes for Ptiunia hybrida extracellular chitinase, for Nicotiana tabacum intracellular chitinase and both intra- and extracellular .beta.-1,3-**glucanase** were cloned and sequenced. Deletion of a small no. of C-terminal amino acids of the intracellular forms of these enzymes resulted in their secretion into the apoplastic space. Antifungal activity of the enzymes correlated with expression of the (modified) intracellular form of the enzyme. Expression plasmids contg. these genes were prepd. and **transgenic** tobacco **plants** expressing the genes were produced.

L2 ANSWER 318 OF 323 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1992:48619 BIOSIS
DOCUMENT NUMBER: BA93:28594
TITLE: MODIFICATION OF GENE EXPRESSION IN RIPENING FRUIT.
AUTHOR(S): SPEIRS J; BRADY C J
CORPORATE SOURCE: DIV. HORTICULTURE, CSIRO, NORTH RYDE, NSW 2113, AUST.
SOURCE: AUST J PLANT PHYSIOL, (1991) 18 (5), 519-532.
CODEN: AJPPCH. ISSN: 0310-7841.
FILE SEGMENT: BA; OLD
LANGUAGE: English

AB Fruit ripening is a coordinated series of biochemical changes that renders the fruit attractive to eat. The fruit may soften, develop colour, change starch or acid into sugar, become flavoursome, produce more ethylene, increase in sensitivity to ethylene, and respire more rapidly. This syndrome is under contemporary genetic control as illustrated by mutants with fruit that develop normally but lack the ability to ripen, or are deficient or modified in an aspect of ripening. Molecular analysis has revealed changes in gene expression in ripening avocado, tomato, pear and apple fruits. Genes encoding .beta.-1, 4-**glucanase** (avocado), polygalacturonase (tomato) and trypsin inhibitor (tomato) are among those whose expression increases through ripening. To modify the softening of tomato fruits, antisense constructs with constitutive promoters have been used to reduce the apparent expression of the polygalacturonase gene. The experiments confirmed a role for polygalacturonase in fruit softening but a need for other inputs was also indicated. In experiments using chimaeric genes, the coding sequence of polygalacturinase linked to a fruit-specific and ethylene-sensitive promoter was introduced into the rin tomato genome. Rin **plants** have fruit which do not ripen or accumulate polygalacturonase. The **transformed** rin fruit accumulated polygalacturonase but did not ripen or soften. This experiment confirms conclusions drawn from the use of antisense constructs that polygalacturonase action is not the sole determinant of texture changes in ripening tomatoes. Ethylene has a key role throughout ripening. The molecular biology of ethylene production and perception is gradually unfolding. A cDNA and ACC synthase for zucchini, a small gene family whose expression correlated with Ethylene Forming Enzyme (EFE) activity, and a

consensus sequence in promoters that are ethylene sensitive have all been described. There is accumulating evidence that some of these sequences and the polygalacturonase sequence are conserved between species, and this will be useful in extending the presently available information.

L2 ANSWER 319 OF 323 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1991:201132 CAPLUS
DOCUMENT NUMBER: 114:201132
TITLE: cDNA cloning of genes for pathogenesis-related proteins for the preparation of transgenic disease-resistant plants
INVENTOR(S): Ryals, John A.; Alexander, Danny C.; Goodman, Robert M.; Meins, Frederick; Payne, George B.; Stinson, Jeffrey R.; Neuhaus, Jean Marc; Moyer, Mary B.; Ward, Eric Russell; Williams, Shericca Cherrer
PATENT ASSIGNEE(S): Ciba-Geigy A.-G., Switz.
SOURCE: Eur. Pat. Appl., 77 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 7
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 392225	A2	19901017	EP 1990-105336	19900321
EP 392225	A3	19910925		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
CA 2012778	AA	19900924	CA 1990-2012778	19900322
AU 9052183	A1	19900927	AU 1990-52183	19900323
AU 642865	B2	19931104		
ZA 9002250	A	19901128	ZA 1990-2250	19900323
HU 60770	A2	19921028	HU 1990-1820	19900323
JP 03035783	A2	19910215	JP 1990-76564	19900326
PRIORITY APPLN. INFO.:			US 1989-329018 A	19890324
			US 1989-368672 A	19890620
			US 1989-425504 A	19891020

AB CDNAs encoding pathogenesis-related proteins of tobacco and cucumber are cloned and characterized and expression vectors using strong constitutive promoters for the expression of the cDNAs in transgenic plants are constructed. Plants expressing these genes are more resistant to disease than their parents (no data). Novel methods for the cloning of regulated genes using polymerase chain reaction and biotinylated nucleic acids are also described. The cDNAs for the pathogenesis-related proteins described were cloned using amino acid sequence-derived oligonucleotide probes. Expression vectors, including binary vectors, were constructed for both sense and antisense orientations of the cDNA using the cauliflower mosaic virus 35S promoter(CaMV35S) or the promoter from the gene for the small subunit of RUBISCO. The expression of these genes in transgenic tobacco plants was demonstrated, as was the crossing required to generate homozygotic plants and seed. The expression of these genes in cell culture of monocotyledonous and dicotyledonous plants is also demonstrated.

L2 ANSWER 320 OF 323 AGRICOLA DUPLICATE 104
ACCESSION NUMBER: 92:32088 AGRICOLA
DOCUMENT NUMBER: IND92012098
TITLE: Tissue-specific and pathogen-induced regulation of a Nicotiana plumbaginifolia beta-1,3-glucanase gene.
AUTHOR(S): Castresana, C.; Carvalho, F. de; Gheysen, G.; Habets, M.; Inze, D.; Montagu, M. van
CORPORATE SOURCE: Rijksuniversiteit Gent, Gent, Belgium
AVAILABILITY: DNAL (QK725.P532)
SOURCE: The Plant cell, Dec 1990. Vol. 2, No. 12. p. 1131-1143

Publisher: Rockville, Md. : American Society of Plant Physiologists.
ISSN: 1040-4651
NOTE: Includes references.
DOCUMENT TYPE: Article
FILE SEGMENT: U.S. Imprints not USDA, Experiment or Extension
LANGUAGE: English

AB The Nicotiana plumbaginifolia gn1 gene encoding a beta-1,3-**glucanase** isoform has been characterized. The gn1 product represents an isoform distinct from the previously identified tobacco 3-1,3-glucanases. By expressing gn1 in Escherichia coli, we have determined directly that the encoded protein does, indeed, correspond to a 6-1,3-**glucanase**. In N. plumbaginifolia, gn1 was found to be expressed in roots and older leaves. **Transgenic** tobacco **plants** containing the 5'-noncoding region of gn1 fused to beta-glucuronidase (GUS) reporter gene also showed maximum levels of GUS activity in roots and older leaves. No detectable activity was present in the upper part of the **transgenic plants** with the exception of stem cells at the bases of emerging shoots. The expression conferred by the gn1 promoter was differentially induced in response to specific **plant** stress treatments. Studies of three **plant** -bacteria interactions showed high levels of GUS activity when infection resulted in a hypersensitive reaction. Increased gene expression was confined to cells surrounding the necrotic lesions. The observed expression pattern suggests that the characterized beta-1,3-**glucanase** plays a role both in **plant** development and in the defense response against pathogen infection.

L2 ANSWER 321 OF 323 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1990:418947 CAPLUS
DOCUMENT NUMBER: 113:18947
TITLE: Production of male-sterile plants and seeds by recombinant DNA methods
INVENTOR(S): Mariani, Celestina; Leemans, Jan; De Greef, Willy; De Beuckeleer, Marc
PATENT ASSIGNEE(S): Plant Genetic Systems N. V., Belg.
SOURCE: PCT Int. Appl., 86 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 8910396	A1	19891102	WO 1989-EP495	19890427
W: AU, DK, FI, HU, JP, US				
EP 344029	A1	19891129	EP 1989-401194	19890426
EP 344029	B1	19970129		
R: AT, BE, CH, DE, ES, FR, GB, GR, IT, LI, LU, NL, SE				
EP 737749	A1	19961016	EP 1996-107004	19890426
R: AT, BE, CH, DE, ES, FR, GB, GR, IT, LI, LU, NL, SE				
AT 148498	E	19970215	AT 1989-401194	19890426
ES 2097745	T3	19970416	ES 1989-401194	19890426
AU 8935371	A1	19891124	AU 1989-35371	19890427
AU 621113	B2	19920305		
HU 52553	A2	19900728	HU 1989-2763	19890427
HU 217413	B	20000128		
ZA 8903136	A	19901228	ZA 1989-3136	19890427
CA 1340324	A1	19990119	CA 1989-597953	19890427
IL 90095	A1	19991028	IL 1989-90095	19890427
IL 117780	A1	19991028	IL 1989-117780	19890427
JP 2000037146	A2	20000208	JP 1999-206912	19890427
JP 3020530	B2	20000315	JP 1989-504514	19890427

DK 8906684	A	19900228	DK 1989-6684	19891227		
US 6372967	B1	20020416	US 1993-27580	19930305		
US 5652354	A	19970729	US 1995-485792	19950607		
US 6316699	B1	20011113	US 1995-485793	19950607		
US 6320097	B1	20011120	US 1995-485788	19950607		
US 6344598	B1	20020205	US 1995-485511	19950607		
AU 9652245	A1	19960926	AU 1996-52245	19960514		
AU 9931248	A1	19990819	AU 1999-31248	19990525		
PRIORITY APPLN. INFO.:			GB 1988-10120	A	19880428	
			EP 1989-401194	A3	19890426	
			IL 1989-90095	A3	19890427	
			JP 1989-504514	A3	19890427	
			WO 1989-EP495	A	19890427	
			US 1989-449901	B1	19891122	
			US 1993-27580	A3	19930305	
			AU 1996-52245	A3	19960514	

AB Male-sterile plants and seed are produced from plant cells transformed with a gene that disturbs the metab., function, or development of the stamen. The 5' flanking region of the Nicotiana tabacum anther-specific gene TA29gene was cloned and fused to gene 4 of Agrobacterium T-DNA. Gene 4 encodes isopentenyl transferase, the overexpression of which causes enhanced prodn. of cytokinin, which disturbs metab. and organogenesis of the tapetum cells.). The plasmid contg. this construct was used to prep. transgenic tobacco plants by std. techniques. No functional tapetum cells were found in the anthers of the flowers of these transgenic tobacco plants.

L2 ANSWER 322 OF 323 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1990:586056 CAPLUS
DOCUMENT NUMBER: 113:186056
TITLE: Chemically regulatable plant genes and their uses
INVENTOR(S): Ryals, John; Montoya, Alice; Harms, Christian; Duesing, John; Sperisen, Christoph; Meins, Fred; Payne, George
PATENT ASSIGNEE(S): Ciba-Geigy A.-G., Switz.
SOURCE: Eur. Pat. Appl., 118 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 7
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 332104	A2	19890913	EP 1989-103888	19890306
EP 332104	A3	19910320		
R: AT, BE, CH, DE, ES, FR, GB, GR, IT, LI, LU, NL, SE				
FI 8901054	A	19890909	FI 1989-1054	19890306
DD 283647	A5	19901017	DD 1989-326307	19890306
IL 89495	A1	19950831	IL 1989-89495	19890306
DK 8901098	A	19890909	DK 1989-1098	19890307
NO 8900972	A	19890911	NO 1989-972	19890307
AU 8931080	A1	19890914	AU 1989-31080	19890307
AU 617433	B2	19911128		
ZA 8901726	A	19891129	ZA 1989-1726	19890307
HU 54417	A2	19910228	HU 1989-1115	19890307
PL 162317	B1	19930930	PL 1989-278117	19890307
RU 2130491	C1	19990520	RU 1989-4613725	19890307
JP 02009377	A2	19900112	JP 1989-55963	19890308
PRIORITY APPLN. INFO.:			US 1988-165667	A 19880308
			US 1989-305566	A 19890206

AB Plant genes that respond to external chem. stimuli, by induction or repression, are cloned, characterized, and described. The genes encode pathogenesis-related proteins. The promoters from these genes are useful

for the regulation of foreign genes (e.g. conferring insect resistance or herbicide tolerance) in transgenic plants. A genomic clone for a pathogenesis-related protein of tobacco was cloned using an oligonucleotide probe derived from the amino acid sequence of the protein. The gene was characterized and the 5' regions isolated. Constructs using different lengths of this region were fused to a .beta.-glucuronidase gene and the expression of these constructs in response to chem. (salicylic acid or methylbenzothiodiazole carboxylate) or pathogen (tobacco mosaic virus) induction in transgenic tobacco plants studied. There was considerable variation in efficiency of induction from one plant to another but plants transformed with plasmid pCIB272 showed strong induction by chem. stimuli. Induction by chem. stimuli was comparable to induction by the pathogen.

L2 ANSWER 323 OF 323 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 105
ACCESSION NUMBER: 1989:418497 CAPLUS
DOCUMENT NUMBER: 111:18497
TITLE: Cauliflower mosaic virus gene VI causes growth suppression, development of necrotic spots and expression of defence-related genes in transgenic tobacco plants
AUTHOR(S): Takahashi, Hideki; Shimamoto, Ko; Ehara, Yoshio
CORPORATE SOURCE: Fac. Agric., Tohoku Univ., Sendai, 980, Japan
SOURCE: Molecular and General Genetics (1989), 216(2-3), 188-94
CODEN: MGGEAE; ISSN: 0026-8925
DOCUMENT TYPE: Journal
LANGUAGE: English

AB In order to study possible functions of the inclusion body matrix protein (IBMP) encoded by gene VI of cauliflower mosaic virus (CaMV), the XbaI fragment contg. the gene VI of a Japanese strain of CaMV (CaMV S-Japan) was transferred to tobacco **plants** by Ti mediated **transformation**. Eight out of 18 kanamycin resistant **plants** (40%) expressed detectable levels of IBMP. Those **transgenic plants** expressing IBMP produced leaves with light green color, and their growth was suppressed as compared with control **plants**. Symptom-like necrotic spots also appeared on the leaves and stems of the mature **transgenic plants**. Furthermore, in these **transgenic plants**, pathogenesis-related proteins 1a, 1b and 1c were highly expressed and the activity of 1,3-.beta.-**glucanase** was increased up to eightfold. From these results, the authors concluded that expression of the IBMP is assocd. with symptom development.